IN THE CLAIMS:

This listing of claims will replace all prior versions, and listing, of claims in the application.

Listing of the Claims:

1. (Withdrawn) A compound analysis method, the method comprising determining a vector quantity having a number of dimensions equal to a number of features derived from the electrical output of an electrically active cellular network with each component of said vector being representative of a change in said feature resulting from the application of a compound to said electrically active cellular network and classifying said vector in accordance with a predetermined cluster analysis methodology.

2. (Withdrawn) A method as claimed in Claim 1, including providing a library of features characterising known compounds such that classification of said vector enables identification of the compound in accordance with a predetermined measure of statistical reliability.

3. (Original) A compound analysis system, the system comprising a micro-electrode array provided by a bio-compatible substrate having a plurality of electrodes situated thereon, said electrodes having an arrangement on said substrate corresponding substantially to that of an electrically active cellular network disposable in use thereon, a multi-channel amplifier coupled to said electrodes and an analyser operatively connected to said amplifier to determine for each active channel a vector quantity having a number of dimensions equal to a number of features derived from the electrical output of said electrically active cellular network with each component of said vector being representative of a change in said feature.

4. (Currently amended) A compound analysis apparatus, the apparatus including a processor and a memory, the processor being operable in response to signals derived from a micro-electrode array connected, in use, thereto, to determine for each channel a vector quantity

having a number of dimensions equal to a number of features derived from the multi-channel electrical output of said micro-electrode array with each component of said vector being representative of a change in said feature, wherein said memory contains a library of features characterising known compounds such that classification of said vector enables identification of a compound deposited, in use, on said array, in accordance with a predetermined measure of statistical reliability.

5. (Original) An apparatus as claimed in Claim 4, including a storage device, such that signals derived from said array are held by said storage device.

6. (Currently amended) A sensor for compound detection, the sensor comprising a receptacle for a micro-electrode array, said receptacle having a connector for receiving multi-channel electrical signals from said array when received in said receptacle, an amplifier for amplifying said signals and a processor, the processor being operable in response to said signals to determine for each channel a vector quantity having a number of dimensions equal to a number of features derived from the electrical output of said micro-electrode array with each component of said vector being representative of a change in said feature.

7. (Original) A sensor as claimed in Claim 6, further including a memory, said memory containing a library of features characterising known compounds such that classification of said vector enables identification of the compound deposited, in use, on said array,

8. (Previously Presented) A sensor as claimed in Claim 6 wherein the memory is integral therewith.

9. (Original) A micro-electrode array for use in compound analysis, the array comprising a bio-compatible substrate having a plurality of electrodes situated thereon, said electrodes being coupled to a connector, said connector providing, in use, electrical connectivity to

an analysis apparatus, wherein the array further includes a memory coupled to said connector, said memory being accessible, in use, by said analysis apparatus.

10. (Withdrawn) A computer program product in a computer-readable medium for use in a compound analysis apparatus, the computer program product comprising determining a vector quantity having a number of dimensions equal to a number of features derived from an electrical output of a micro-electrode array with each component of said vector being representative of a change in said feature, accessing a memory containing a library of features characterising known compounds and classifying said vector in order to identify a compound deposited, in use, on said array.

11. (Withdrawn) A computer program product as claimed in Claim 10, including determining a level of statistical reliability applicable to said identification of said compound.

12-13. (Cancelled)

14. (New) A compound analysis system according to Claim 3, wherein said analyser is adapted to select a set of channels, and perform feature extraction on each of said selected channels to form a feature set.

15. (New) A compound analysis system according to Claim 14, wherein channels with the most frequently occurring non-zero number of spikes are selected.

16. (New) A compound analysis system according to Claim 14, wherein extracted feature values are averaged across said feature set.

17. (New) A compound analysis system according to Claim 14, wherein the significance of an extracted feature is estimated by calculating the standard deviation of extracted feature values across said feature set.

18. (New) A compound analysis system according to Claim 3, wherein said analyser is adapted to determine a vector quantity having components representative of both local and global features across said channels.

19. (New) A compound analysis system according to Claim 3, wherein said analyser is adapted to determine a vector quantity having a component representative of the propagation speed of action potentials.